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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/724,022	11/26/2003	Emilio Camerlenghi	2110-88-3	7263
996	7590	11/02/2004	EXAMINER	
GRAYBEAL, JACKSON, HALEY LLP			HOANG, HUAN	
155 - 108TH AVENUE NE			ART UNIT	PAPER NUMBER
SUITE 350				
BELLEVUE, WA 98004-5901			2818	

DATE MAILED: 11/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/724,022	CAMERLENGHI ET AL.	
	<b>Examiner</b> Huan Hoang	<b>Art Unit</b> 2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### **Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on \_\_\_\_.

2a)  This action is **FINAL**.                    2b)  This action is non-final.

3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

4)  Claim(s) 1-20 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5)  Claim(s) \_\_\_\_\_ is/are allowed.

6)  Claim(s) 1-8, 10-15 and 17-20 is/are rejected.

7)  Claim(s) 9 and 16 is/are objected to.

8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on \_\_\_\_\_ is/are: a)  accepted or b)  objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All    b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)  Notice of References Cited (PTO-892)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3)  Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 070604.

4)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.  
5)  Notice of Informal Patent Application (PTO-152)  
6)  Other: \_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 2, 4-8, 10-15 and 17-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee et al.

Lee et al. discloses a single cell method, a flash memory device and an electronic system having all the steps and elements as recited in claims 1, 2, 4-8, 10-15 and 17-20 as follows:

- a bit by bit erasing by applying to each single word line a negative voltage (-15V, Fig. 16(b) and paragraph [0109], lines 9-10) and on the drain terminal of each single cell a programming voltage (0V, Fig. 16(e));
- erasing method applied to cells having a higher threshold than the original one (paragraph [006], erase operation is to decrease the V<sub>t</sub>);
- a subsequent erase-verify phase performed after the bit by bit erasing (Fig. 17(f)).

With respect to claims 7, 13 and 17, the step of applying a positive voltage on a selected bit line of the sector is disclosed in paragraph [0117], lines 2-3.

The step of determining which memory cells in the sector have a threshold greater than a threshold value is the step of selecting the memory cells to be erased (memory cells having greater threshold voltages), and the step of maintaining the other bit lines associated with the sector at ground is disclosed in paragraph [0117], lines 11-12.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 3 rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. in view of Fukumoto.

Lee et al. discloses all the steps of claim 1 except for the substrate biased at a negative voltage. However, the use of a ground voltage or a negative voltage for the substrate in an erasing operation is well-known in the art and this is taught by Fukumoto (Figs 19 and 20 and column 15, lines 40-41 and lines 63-64). It would have been obvious to one having ordinary skill in the art to modify Lee et al. by using a negative voltage for the substrate in an erasing operation in order to improve the number of

erasing and writing times and improve the reliability, while decreasing a supply voltage required for write and erase (Fukumoto, column 2, lines 60-63).

***Allowable Subject Matter***

5. Claims 9 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not teach or suggest the limitation "applying to each memory cell determined to have a threshold voltage greater than the threshold value a test voltage having a value equal to an erase-verify voltage plus a voltage margin".

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Huan Hoang whose telephone number is (571) 272-1779. The examiner can normally be reached on Mon-Fri 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Huan Hoang

Huan Hoang  
Primary Examiner  
Art Unit 2818

HH  
10/28/04.